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Powerful new analytical capabilities are becoming available as the result of coupling various separation techniques with modern atomic spectrometry. These approaches can provide the analyst with tremendous insight into the elemental composition of each eluting constituent. The very factors which allow atomic emission to provide element specific detection for virtually the entire periodic table, can cause major problems when trying to apply the technique to separation techniques such as gas and liquid chromatography. The resulting transient signals and background effects over a large wavelength region, coupled with the relatively narrow atomic line band width, present problems in both detection and data manipulation. These problems will be reviewed, and various potential solutions considered. A new approach which holds great promise for handling these problems will be presented. This technique employs array detectors capable of simultaneously observing a very large number of wavelengths, providing analyte, background, and diagnostic data. When used in conjunction with appropriate software, an entirely new dimension of "intelligent instrument" becomes possible. Operational capabilities of such instrumentation will be (over

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By Atomic Emission Spectrometry

by

M.B. Denton and R.B. Bilhorn

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THE FUTURE OF INTELLIGENT SPECTROMETERS IN METAL SPECIATION  
BY ATOMIC EMISSION SPECTROMETRY

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Index Headings: Atomic emission spectrometry, charge transfer device,  
direct current plasma, HPLC, multichannel detection.

ABSTRACT

Powerful new analytical capabilities are becoming available as the result of coupling various separation techniques with modern atomic spectrometry. These approaches can provide the analyst with tremendous insight into the elemental composition of each eluting constituent. The very factors which allow atomic emission to provide element specific detection for virtually the entire periodic table, can cause major problems when trying to apply the technique to separation techniques such as gas and liquid chromatography. The resulting transient signals and background effects over a large wavelength region, coupled with the relatively narrow atomic line band width, present problems in both detection and data manipulation. These problems will be reviewed, and various potential solutions considered. A new approach which holds great promise for handling these problems will be presented. This technique employs array detectors capable of simultaneously observing a very large number of wavelengths, providing analyte, background, and diagnostic data. When used in conjunction with appropriate software, an entirely new dimension of "intelligent instrument" becomes possible. Operational capabilities of such instrumentation will be presented, including data from a variety of chemical systems.

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